Exhibit 2

Expert Comments of Mr. Peter Carlson

House 80
Humboldt State University
Arcata CA 95521

13 November 1998

Bruce Halstead, US Fish & Wildlife Service
1125 16th Street, Room 209
Arcata, CA 95521
fax (707) 822-8411

Re: Permit numbers PRT-828950 and 1157.

John Munn
California Department of Forestry
1416 Ninth Street
Sacramento, CA 95814
fax (916) 653-8957

Re: SYP 96-002

Mr. Halstead and Mr. Munn:

Enclosed are my comments on the draft PALCO Habitat Conservation Plan/Sustained Yield Plan and the associated draft Environmental Impact Statement/Environmental Impact Report. The comments are separate but my comments on the EIS/EIR reference some of the comments on the HCP/SYP. I have also included a copy of my CV for your records. Copies of documents I cited are being submitted under separate cover by EPIC and the Sierra Club. Thank you for your time in considering my comments on the proposed activities.

Sincerely,

Peter C. Carlson

enclosures

Peter Craig Carlson

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EDUCATION

M.S. in Wildlife Ecology, May 1989, University of Florida, Gainesville
Thesis: Effects of Burning in the Rockland Pine Community on the Key Deer National Wildlife Refuge, Florida Keys
Research Advisor: George W. Tanner
GPA: 3.75/4.0

B.S. in Ecology and Evolution, May 1984, University of Illinois, Urbana
Illinois State Scholarship (1980); Phi Beta Kappa (1984)
GPA: 4.56/5.0

RESEARCH EXPERIENCE

Research Associate: Humboldt State University Foundation, Arcata, CA
Spotted owl demography study, Six Rivers National Forest, CA, 4/94-present.
Principle Investigator: Dr. R. J. Gutiérrez, Dept. of Wildlife 707-826-3320
Project Leader: Dr. Alan B. Franklin, Dept. of Wildlife 970-491-5396, 707-826-5650

Assistant Project Leader for a study of the demography and ecology of northern spotted owls in northwest California. During the field season supervise field crews and data collection. Also assist in data management, analysis and reporting of results. The focus of the study is to determine population trends and dynamics. Duties include planning, supervising and participating in daily assignments to collect data on occupancy and reproductive success of owls; capture and banding of adult and juvenile owls; train field assistants for this and related projects; ensure proper data collection by crews; act as liaison with personnel of the Forest Service, BLM, and private organizations to coordinate shared data; and conduct independent research related to the project. Recent research has focused on pair bonds in all 3 subspecies of spotted owls.

Research Assistant: Humboldt State University Foundation, Arcata, CA
Spotted owl demography study, San Bernardino National Forest, CA, 4/92-3/94.
Principle Investigator: Dr. R. J. Gutiérrez, Dept. of Wildlife 707-826-3320
Project Leader: William LaHaye 909-585-1029

Conduct field research on the demography of California spotted owls in southern California. The focus of the study is to observe territorial status, survival, and nesting success to determine population dynamics. As crew leader, duties included capturing and banding of adult and juvenile owls; conducting surveys and walk-ins (resighting visits) at known and potential owl territories; collecting data on nesting habitat; ensuring proper data collection by crew; and assisting in data management and analysis.

Field Biologist: Mobay Corporation, Stilwell, KS

Avian pesticide study, Tallahassee, FL, and Stilwell, KS, 4/91-9/91.

Assisted in an avian population study to determine the effects of pesticide use on golf courses in north Florida. Supervised 3 technicians as crew leader in charge of netting and banding 6 focal species, identifying other netted species, and collecting grass, soil, water, and invertebrate samples for residue analysis. Also responsible for data management, analysis, and report writing.

Research Assistant: University of Florida, Gainesville, FL, 5/90-12/90

Assisted in data management, report writing, and manuscript editing. The main project included data collection, analysis, and producing a report on use of young pine plantations for a long term forest bird community study. Other projects included writing a report on a landowner and outdoor recreationist survey and editing a 4-H manual on wildlife habitat management techniques.

Project Manager: University of Florida, Gainesville, FL

White-tailed deer population study, Big Cypress National Preserve, FL, 5/89-2/90

Principle Investigator: Dr. Ronald Labisky, Dept. of Wildlife 352-846-0567

Conducted research on white-tailed deer population dynamics in the Big Cypress National Preserve and Everglades National Park. Captured and monitored deer by radio telemetry to determine habitat use, activity patterns, and causes of mortality. The primary goal of the study was to determine the status of the deer population in the area as a prey base for the endangered Florida panther and as a game species in the Preserve. Responsible for developing mapping and data collection methods for the study. The position was temporary until graduate students could begin their field seasons.

Graduate Research Assistant: University of Florida, Gainesville, FL, 8/86-4/89

Key deer habitat study, Big Cypress National Preserve, FL, 5/89-2/90

Principle Investigator: Dr. George Tanner, Dept. of Wildlife 352-846-0570

Conducted research on habitat management using prescribed burning on the National Key Deer Wildlife Refuge. The goal of the study was to document the specific effects of burning in the pine rockland and the possible benefits for the endangered Key deer. Effects on rare and endemic plants was also considered. Duties included data collection, data analysis, writing quarterly and annual reports, and maintaining progress towards an M.S. degree.

Field Assistant: Brigham Young University, Provo, UT, 4/86-7/86

Captured, radio tagged, and monitored activity and habitat use of red-tailed hawks, barred owls, screech owls, and kestrels in western Illinois for a toxicology project. Monitored raptor populations using day and night transect routes. Project was initiated to study potential insecticide poisoning of song birds and secondary poisoning of raptors in agricultural areas.

Field Assistant: University of Illinois, Urbana, IL, summer 1983

Assisted in a survey of fresh water fish. Captured fish by electroseining, identified taxa in the field and lab, and measured stream physical characteristics.

Field Assistant: University of Chicago, Chicago, IL, summers 1982-1983 Established, maintained, and monitored study plots in oak-hickory forest community for an Impatiens genetic study; collected data on seed pod production.

PUBLICATIONS

Carlson, P. C., A. B. Franklin, W. S. LaHaye, and R. J. Gutiérrez. In prep. The Role of Divorce and Survival in Spotted Owl (Strix occidentalis) Pair Bonds.

Carlson, P. C., W. S. LaHaye, and A. B. Franklin. 1998. Incestuous Behavior in Spotted Owls. Wilson Bull. 110:562-564.

Carlson, P. C., G. W. Tanner, J. M. Wood, and S. R. Humphrey. 1993. Fire in Key deer habitat improves browse, prevents succession, and preserves endemic herbs. J. Wildl. Manage. 57:914-928.

Carlson, P. C., G. W. Tanner, and S. R. Humphrey. 1991. Importance of fire frequency in rockland pine forest of the Florida Keys. Pages 407-408 *in* Proceedings of the 17th Tall Timbers Fire Ecology Conference. Tall Timbers Research Station, Tallahassee, FL.

Marion, W. R., P. C. Carlson, and M. Klein. 1991. Leasing for outdoor recreation in Florida: results of a survey of private landowners and recreationists. Circular 1021, Florida Cooperative Extension Service, University of Florida. 8 pp.

Angermeier, P. L., and P. C. Carlson. 1985. Effects of season and substrate on availability of drift for fish in a small warmwater stream. Transactions of the Illinois Academy of Science 78:199-206.

REFERENCES

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Comments on the
Draft Environmental Impact Statement/Environmental Impact Report for the
Headwaters Forest Acquisition and the PALCO SYP and HCP
prepared by USFWS and CDF, October 1998

Peter Carlson
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Arcata CA 95521

13 November 1998

I have reviewed the sections of the draft EIS/EIR relevant to the northern spotted owl (NSO) and am submitting these comments regarding the impacts of the proposed PALCO HCP. I am a professional wildlife biologist with over 6 years of experience working with spotted owls. My comments pertain to the adequacy of the EIS/EIR to follow the legal requirements of identifying and mitigating all significant impacts on listed species, specifically the spotted owl. My comments are listed by section and page and also refer to my comments on the PALCO HCP.

Summary

Page S-21: EIS/EIR: No long-term significant effect on NSO populations under Alternative 2. Both short- and long-term decrease in suitable nesting habitat would occur but would be mitigated through the HCP by ensuring that owl populations do not drop below an identified baseline.

Comment: This is based on an incorrect interpretation of the HCP and the PALCO NSO Conservation Plan. The plan does not ensure the owl population will stay above an identified level. Rather, it proposes to monitor the population and if it drops below 67% of a baseline for 3 consecutive years PALCO will meet with USFWS to develop a "no take" strategy. My comments on the HCP outline how the population could decline below the 67% level. The EIS/EIR needs to consider the possibility of the NSO population falling below the 67% level. In my opinion, the EIS has not justified the conclusion of no long-term significant effect. PC-1

Chapter 2, Alternatives

Page 2-27: EIS/EIR: Mitigation for impacts on NSO includes the NSO Conservation Plan combined with MMCAs and Headwaters Reserve.

Comment: On page S-8 the EIS/EIR states that the protection of Headwaters is not mitigation for the HCP/SYP. Also, the MMCAs may not be good mitigation for the NSO since the areas contain few owl sites and may not be good reproductive sites. My comments on the HCP detail the reasons for this conclusion. Furthermore, the EIS/EIR states that all known nest sites will be protected for the first five years of the plan (which is repeated on page 2-62). This is incorrect. The HCP proposes that all current nests or activity centers (one per site) will be protected for the first five years. Spotted owl pairs often use several nests within a five-year period but only the one currently being used will be protected under the plan. PC-2

Page 2-77: EIS/EIR: Monitoring of NSO population is an important part of the HCP because if "population falls to a specified level, take prohibitions would be reinstated." Comment: I agree that monitoring is an important part of the HCP, but the plan does not propose an adequate monitoring plan to detect changes in the owl population. The EIS/EIR recognizes this in the measures recommended on page 2-77. Furthermore, the HCP does not specify a level at which take prohibitions would be reinstated. The HCP only proposes to confer with the USFWS on how to proceed with a no take strategy after 3 consecutive years of a decline below 67% of a baseline. The baseline is yet to be determined and the plan allows for a much larger decline than to 67% of the baseline. Once the population drops below 67%, two more years at or below that level must occur before PL will consider a no take strategy. Finally, because the no-take strategy is undefined, it is impossible to make a conclusion on whether the impacts will be adequately mitigated. PC-3

Chapter 3.10, Wildlife
Table 3.10-9, page 3.10-92:

Conclusion of less-than-significant effect on spotted owl is based on the assumption that HCP mitigation and monitoring will adequately minimize and mitigate effects which "may be significant in short and long term due to potential substantial decline in population". Thus, a decline of 33% from a baseline population is considered substantial and would be a significant effect if not mitigated. In my comments on the HCP and elsewhere in these comments on the EIS/EIR I have discussed the problems with the mitigation measures and how the EIS/EIR incorrectly interprets some of the proposed measures. Therefore, it is questionable whether the significant impacts of the proposed action will be mitigated by the measures proposed in the HCP.

Also, threshold of significance is defined as "substantial loss or degradation of occupied suitable habitat". Thus, the conclusions of less-than-significant effect are based on the assumption that NSO populations will fluctuate in approximate proportion to available habitat (HCP vol. IV, pg 11; EIS/EIR pg 3.10-133). There is little or no scientific information to currently support such an assumption. The agencies should take a more cautious approach and not use this assumption until it can be supported by empirical evidence. PC-4

Page 3.10-100: The EIS/EIR states that loss of LSH under Alternative 1 would be considerably greater than under Alternative 2. This contradicts the information in table 3.9-1 and on page 3.10-101 which states that 40% of LSH would be harvested under alternative 1 vs. 57% of LSH under Alternative 2. PC-5

Page 3.10-135: The worst case scenario for the NSO is considered to be a take of 33% of the baseline population and is considered to be unlikely due to mitigation measures and monitoring. Since the HCP allows for a take of greater than 33%, the EIS/EIR needs to reassess the worst case scenario. The main mitigation measures for the NSO include maintaining 10% of the area in nesting habitat, protecting 18 PC-6

ac around active activity centers, and monitoring the population. Since the 10% nesting habitat can be accounted for in the RZMs, the worst case scenario should consider harvests of most of the potential owl habitat outside of protected zones. Additionally, with only 18 ac protected for activity centers it is likely that in the long-term many owls will abandon such sites. If most of the 10% nesting habitat is in narrow RZMs, there is no assurance that it would be adequate to support nesting pairs. Owls typically nest in larger blocks of habitat and not in narrow strips. Under this scenario, the owl population could drop significantly more than the 33% projected as a worst case.

PC-6 cont.

Also, the EIS/EIR states that the proposal to maintain habitat for 66% of a baseline owl population (approximately 98 pairs under the HCP) exceeds the goal of the Draft Recovery Plan for the NSO. The Draft Recovery Plan recommends at least three 20-pair population centers (clusters of contiguous territories) in central Humboldt County because a substantial population of owls occurs east and southeast of Eureka where no federal lands occur. The EIS/EIR only cites the southern Humboldt and northern Mendocino counties where federal lands do occur. Whether the population of owls on PALCO land can be considered equivalent to three population centers needs to be addressed. One large cluster of owls is not the same as three smaller clusters; one reason to have separate clusters is to allow for problems to occur in one population without affecting others. Since PALCO lands are mostly contiguous, the population of owls on their land may only be one large cluster or, given the extant and shape of PALCO lands into a north and south section, possibly two clusters. The agencies should assess whether the PALCO owl population can be considered one cluster, or perhaps two clusters, and what other lands will provide populations for the clusters recommended under the Draft Recovery Plan. The agencies should not consider the PALCO owl population as meeting the full needs of spotted owl recovery in the region, but rather as one important component in the recovery plan.

PC-7

Comments on the Draft Pacific Lumber Company Habitat Conservation Plan
and Northern Spotted Owl Conservation Plan

Peter C. Carlson
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Arcata, CA 95521
12 November 1998

As a professional wildlife biologist with over 6 years of experience working with spotted owls, I have reviewed the portions of the Habitat Conservation Plan (HCP) relevant to the northern spotted owl. My comments pertain to the scientific adequacy of the HCP to follow the legal requirements of the ESA. My comments focus on the requirements that the HCP and resulting Incidental Take Permit will 1) not appreciably reduce the likelihood of survival and recovery of the owl in the wild and 2) minimize and mitigate the effects of incidental takes.

Overview

In my opinion, while the HCP may not directly jeopardize survival of the northern spotted owl across it's range in the Pacific Northwest, it may jeopardize the coast range population in California. The species has range-wide protection measures for habitat in effect on federal lands and some private and other public lands. If the HCP is implemented, a drastic reduction in the spotted owl population on PALCO land could result. Although the species would likely continue to survive on public lands, the spotted owl population on PALCO land is a significant portion of the population in the California Coast Range region where the majority of the owls are on private timber lands (USDI Fish and Wildlife Service 1991). A significant decline in the owl population on PALCO land could jeopardize the owl in the region, especially if the HCP set a precedent and similar plans were followed on other private lands to manage for owls. The cumulative impacts from setting such a precedent in the coast range should be considered. The HCP allows a 33% drop in the population before PALCO will follow a "no take" strategy. A 33% drop may be significant enough to be considered a jeopardy situation because the USFWS considers a 33% drop a significant effect without the mitigation and monitoring proposed (EIS, Table 3.10-9). The HCP does not minimize or mitigate the effects of incidental take adequately. Furthermore, given the inadequate knowledge of owl habitat relations presented in the HCP, as discussed below, a larger drop in the owl population is certainly possible through poor mitigation and monitoring.

PC-8

Habitat

One mitigation measure is to provide owl habitat throughout the plan period (HCP vol. IV, pg. 10). A primary concern is whether the habitat on PALCO land has been adequately described and identified as appropriate owl habitat. There is no indication that the correlation between the California Wildlife Habitat Relationships System (CWHR) and PALCO timber stand maps (the cross walk, HCP vol. IV pg. 5) was checked for accuracy and related to data on the owls (such as occupancy and reproduction). Data on habitat from timber stand maps is at a

PC-9

gross scale and may not be adequate for defining owl habitat without doing ground truthing and testing against known information on the sites. An examination of the habitat maps indicates that extensive areas of "foraging habitat" will be considered "high quality nesting habitat" within 35 years (vol. V, maps 15 and 28). Also, a large area north of the proposed Headwaters Reserve would go from late seral forest at 10 years to young forest at 35 years (maps 21, 22), identified as "low quality nesting habitat" (map 28). Thus, the HCP proposes that in less than 25 years after clear cutting, the area will be suitable for nesting. These assumptions, that nesting habitat% can develop within the time periods predicted, need to be tested for their validity. PALCO should identify stands with characteristics similar to the proposed future stands and verify the habitat on the ground and whether or not they are being used by owls. For example, "foraging habitat" which develops into "high quality nesting habitat" within 35 years will not actually be good owl nesting habitat unless adequate nesting structures are present. Nesting structures may not be present unless provided in residual, mature trees within the managed stand. If it is not documented that the predicted habitat types will be adequate to support owls and allow reproductive activity in the future (25-35 years from now) than the assumption that the owl population will change in proportion to available habitat is invalid (HCP vol. IV pg. 11) and the owl population could drop below the level that is expected to occur under the plan.

PC-9 CONT.

Research

The HCP should incorporate data colleted by PALCO concerning the owls on their land. One objective of the earlier spotted owl studies on PALCO land was to determine the nesting success in various habitat types (HCP vol. IV pg. 4), yet this information is not considered in the plan. Data on nesting success should have been used in developing the habitat classes and in providing appropriate habitat over the course of the plan. Other studies in northern California have indicated that a mixture of mature forest and young forest or other habitat types may be better for spotted owl reproduction than large, pure stands of mature forest. The plan mentions Thome's (1997) results on Simpson Timber Company land where reproduction was lower in large, old stands compared to stands with a younger forest component. Franklin (1997) also found that reproduction was not highest in large stands of old forest, but in stands with a mixture of old and young forest where the habitats were interspersed. These results may be related to prey density. It is important to note that this result does not apply to survival of adult owls. Survival is positively associated with large stands of old forest (Franklin 1997). Thus, some balance of habitat mixture is optimal for spotted owls so that both survival and reproduction are maintained in the long term. PALCO should address an analysis of nesting success in various habitat types in developing their HCP as it would be important in ensuring that appropriate habitat is included in the mitigation measures.

PC-10

As an example, a cursory examination of the maps on habitat and owl sites where nesting occurred in 1997 (vol. V, map 27) indicates that only 13% of owl pairs in the MMCAs nested in 1997 compared to 30% of owl pairs nesting across all PALCO lands. This could be a result of minimal attempt to document nesting by owls in MMCAs since the areas are to be set aside from

harvest, or it could be an artifact of small sample size. But if it is representative of the true reproductive status it could indicate that owl sites in MCAAs may not be the best to set aside for owl mitigation because reproduction as well as survival of owls should be considered in the plan. A related observation is that most of the nesting owls in 1997 were located near the "edge" of "high quality" stands. Thus the owls may reproduce best when they have high quality nesting habitat available intermixed with other foraging habitats. This is only a rough example of the type of research that PALCO should conduct with their data for the HCP. PC-10 CONT.

The HCP is also lacking in mitigation measures concerning owl activity centers. The plan proposes to protect only 18 ac of the current activity center (nest or roost tree), and if the owls move to a new activity center the old one is no longer protected. This is inadequate to protect owls at a site over the long term and is not based on the known biology of the owl. It is typical for owls to switch nest trees often, using a tree for one or more years then switching to a different nest tree for one or more years (Forsman et al. 1984, pers. obs.). Sometimes they go back to use the original nest tree. This pattern is also seen for owls on Simpson land (Folliard pers. comm.). Thus, an owl pair may use several nest trees in their core area and reuse the same tree several times but not necessarily in consecutive years. It is believed that the owls switch nests partly to minimize nest parasites (Gutiérrez pers. comm.). Protecting only 18 ac for current activity centers would not provide enough alternate nest trees for owls to use in their core areas. The distance between nest trees can be <50 m to over 1000 m (Forsman et al 1984; pers. obs.). The Fish and Wildlife Service proposed the size of a protected activity center for owls as 70 acres (based on 1000' radius) in the proposed 4(d) rule under the ESA. This would minimize significant impacts to owls more than the 18 ac defined in the HCP, and allow more alternate nest trees to be incorporated. PC-11

Another analysis that PALCO should do with their data is to look at site fidelity by banded owls to see how often they switch activity centers and how far they tend to move. The plan states that the color bands help to understand site fidelity (HCP vol. IV pg. 5), but no information is given or included in the proposed management. Spotted owls often return to a previously used nest after a few years. Thus, harvesting previously used nest trees or potential nest trees within 500'-1000' of a current nest could eliminate alternate nest sites that the owls may need for future reproduction. Continued harvesting of old nest sites following this strategy could eventually lead to owls abandoning an area. If followed over most of PALCO holdings, this strategy could lead to a significant decline in the base owl population. PC-12

Competition by barred owls

Another concern is the potential problem of the effects of barred owls on the spotted owl population because barred owls can compete with spotted owls (Dunbar et al. 1991, Dark et al. 1998). PALCO addresses the issue in the HCP but does not include any mitigation measures to allow for negative impacts of barred owls on spotted owls. Also, the information on barred owls in the HCP is not current. It states that the social status of the barred owls is unknown, but at least one pair is known to have nested and have 2 young on PALCO land (Bartlett pers. comm.; PC-13

pers. obs.). Given the expansion of barred owl sites in California in recent years and the negative interactions with spotted owls, such as territorial displacement, predation, and competition for nest sites (Dark et al. 1998), the HCP should take a more cautious approach to avoid an escalating problem. Barred owls can use a wider variety of habitat types (Dunbar 1991, Dark et al. 1998). Thus an increase in habitat modification could allow barred owls to be more competitive than spotted owls on PALCO lands. The HCP should provide more information on what research is being done on barred owls and their relationships with spotted owls, incorporate a monitoring plan for barred owls, and include a contingency for when barred owls reach a more critical level. If the number of current barred owl sites doubles and the spotted owl population drops to 100 pairs (67% of baseline, as allowed under the HCP), then the barred owl population would equal 25% of the spotted owl population. Since the HCP proposes to harvest approximately 39% of late successional habitat within the first decade (EIS table 3.9-1), an increase in barred owls could be rapid. This would likely have a significant effect on spotted owls.

PC-13 CONT.

Monitoring

A monitoring plan for the spotted owl is an important component of the HCP to ensure that more take of owls than is allowed under an ITP does not occur. The HCP is not clear on the methods for monitoring the owl population. It does not describe how the sampling method of Azuma et al. (1990) will be modified or how sample areas to be surveyed will be selected. Sample areas should be random to be representative for the entire area. The method proposed by Azuma et al. (1990) was meant to be used on one set of random sites and continued on those sites for statistical validity. If PALCO did this on their lands under active management, it is unclear how such a random sample would be directly comparable to other areas of their property without further monitoring. Thus the method proposed may not be appropriate for the HCP. If the sampling methods are not statistically sound, biased results could be obtained and mask the actual trend in the owl population. Furthermore, the plan calls for only two surveys for new operations, which does not meet the FWS protocol for owl surveys (USDI Fish and Wildlife Service 1992). The approach of waiting for the population to drop below 67% of baseline for three consecutive years before developing a "no take" strategy is not an adequate safety measure to mitigate the effects of take. Once the population falls below 67%, a continued decline for two more years could result in a population below 50% of baseline before the causes of the decline are addressed. Since the sampling scheme proposed is unclear, this scenario is very possible. If the decline was related to habitat alteration it may be too late at that point for the owl population to increase above the target level within the plan period.

PC-14

Current knowledge and owl plans

The HCP should reference other plans concerning the spotted owl in the region in order to incorporate the most current knowledge on the species. The HCP does reference the Simpson Timber Company northern spotted owl HCP, which was approved in 1992. This was the first

PC-15